Great Salt Lake Paleolimnology metals report

Wayne Wurtsbaugh to: hernandez.kathryn 10/31/2012 09:25 PM

From: Wayne Wurtsbaugh <wayne.wurtsbaugh@usu.edu>
To:

Kathryn;
Attached is a draft report on the paleolimnology study we did of metals in the Great Salt Lake. The abstract is shown below. The report is not finalized by the Utah DWQ, but they' ve finally given permission to release the draft. Our sediment core in Farmington Bay (near NE Oil Drain) did not give results consistent with the cores from Gilbert Bay, but nevertheless I think you will find the results interesting and useful.

Let me know if you have questions about the analysis or if you have suggestions that we might use in the revised report and manuscript we will be preparing.

Sincerely,
Wayne Wurtsbaugh

Paleolimnological Analysis of the History of Metals Contamination in the Great Salt Lake, Utah

Abstract

Three sediment cores from the Great Salt Lake were analyzed to determine the magnitude and timing of the deposition of 21 metal contaminants. In the main lake (Gilbert Bay) concentrations of copper, lead, zinc, cadmium, silver, molybdenum, tin, mercury and others began increasing in the sediments in the late 1800s or early 1900s and peaked in the 1950s. These increases were coincident with increases in mining and smelting activities for these metals in Utah. Contamination indices in the 1950s were 20-60 fold above background concentrations for silver, copper, lead and molybdenum, and <15-fold for most other metals. Since the 1950s, concentrations of most metals in the sediments have decreased 2-5 fold, coincident with decreases in mining and improved smelting technologies. Nevertheless concentrations for many metals in surficial sediments are still above acceptable criteria established for freshwater ecosystems. In contrast to most metals, concentrations of selenium and arsenic were stable or increasing slightly in the Gilbert Bay sediments. In a coring site located in Farmington Bay near an EPA Superfund Site discharge canal, concentrations of metals were high and showed no indication of decreasing in more recent sediments. Surficial sediments from additional sites in the Great Salt Lake indicated that metals were more concentrated towards the southern end of the lake where the primary sources of contamination were located.

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'The most exciting phrase to hear in science, the one that heralds new discoveries
--Isaac Asimov

Metal paleolimnology GSL MS Draft_Oct 2012.pdf